

# **AN ARTICLE OF FURNITURE HAVING A SUPPORT MEMBER WITH AN ADJUSTABLE CONTOUR**

## **BACKGROUND OF THE INVENTION**

### **1. Field of the invention.**

The present invention relates to an article of furniture, and, more particularly, to an article of furniture capable of being sat upon and/or reclined in by a user.

### **2. Description of the related art.**

Articles of furniture such as seats, chairs, recliners, couches and sofas are available for sitting upon and/or reclining in. Certain of these articles have at least one support surface that is provided with an extra mechanical support mechanism, commonly in the seat back for the lumbar region of the back of a user. Such an extra support mechanism typically is mechanically biased. Sometimes, a lever is provided for moving and thereby adjusting the position of the mechanical support mechanism to maximize the comfort of the user. That lever may require a significant effort to reach and adjust, especially with respect to a car seat.

What is needed in the art is an extra support mechanism associated with a support surface of an article of furniture that permits the extra support mechanism to be positioned and contoured for the comfort of a particular user and then easily held in that particular contour.

## **SUMMARY OF THE INVENTION**

The present invention provides an air-regulated, cushioned unit for a support of an article of furniture which has multiple air bladders associated therewith, the air bladders being readily positioned and contoured for the comfort of a particular user and then easily held in that particular contour.

The invention comprises, in one form thereof, an article of furniture including a support having a support surface. A plurality of air bladders are mounted relative to the support surface,

each air bladder having expandable foam therein. At least one fluid line fluidly couples the air bladders together. A single valve is fluidly coupled with the at least one fluid line.

An advantage of the present invention is the air bladder system of the present invention, by using hydrodynamics, permits an article of furniture to be contoured for the comfort of a particular user and then easily held in that particular contour even after that particular user vacates that article of furniture.

Another advantage is that the contour can be held in place or adjusted by working a single valve.

An additional advantage is that the foam in each air bladder is naturally biased toward its full size, and, consequently, the air bladders will automatically tend to expand to their full size upon opening of the system valve, thus requiring no pump to expand any bladder.

Yet another advantage is the air bladder system may either be made a permanent or a temporary part of a given article of furniture.

#### **BRIEF DESCRIPTION OF THE DRAWINGS**

The above-mentioned and other features and advantages of this invention, and the manner of attaining them, will become more apparent and the invention will be better understood by reference to the following description of an embodiment of the invention taken in conjunction with the accompanying drawing, which is a partial cut-away view of an article of furniture of the present embodiment. The exemplification set out herein illustrates one preferred embodiment of the invention, in one form, and such exemplification is not to be construed as limiting the scope of the invention in any manner.

## **DETAILED DESCRIPTION OF THE INVENTION**

Referring now to the drawing, there is shown an article of furniture 10 which generally includes a support 12, a plurality of air bladders 14, at least one fluid line 16 (shown in phantom) and a single valve 18.

5 Article of furniture 10 in the present embodiment is a chair with a seat 20 and a seat back 22. In the present embodiment, seat back 22 is support 12. Support 12 has a support surface 24 with a plurality of air bladders 14, at least one fluid line 16 (shown in phantom) and a single valve 18 mounted thereon. Support surface 24 has at least one pocket 25 mounted thereon which, as to be explained in greater detail later, allows air bladders 14 to be mounted to support  
10 surface 24 while permitting access thereto.

Air bladders 14 are mounted relative to support surface 24, each air bladder 14 having expandable foam 26 (shown in a partial cut-away in one of air bladders 14) therein. Expandable foam 26 has an expanded state 28 (as shown) and a compressed state (not shown). Expandable foam 26, having an open cell structure, is characteristically biased toward expanded state 28,  
15 unless held in the compressed state by an outside force. The presence of expandable foam 26 within each air bladder 14 permits each air bladder to assume and be held in a particular inflation state (i.e., that created by someone sitting in article of furniture 10) upon compression of each air bladder 14.

Air bladders 14 are held in place on support surface 24, at least in part, by a flexible  
20 support member 30. Flexible support member 30, in the present embodiment, is mounted to support surface 24 permanently, as by welds 32 or some other type of metallurgical or adhesive joints. At least one lower segment 31 of flexible support member 30 is removably inserted via a slip fit into one of at least one pocket 25, to help hold air bladders 14 in place yet allow easy

access thereto. Further, air bladders 14 and flexible support member 30, when mounted on seat back 22, together are configured for providing lumbar support.

Air bladders 14 are fluidly connected to each other by fluid lines 16. Fluid lines 16 are mounted so as to be positioned between flexible support member 30 and support surface 24.

- 5 Such positioning serves to protect fluid lines 16 and to keep them from view, even if no further cushioning is provided with respect to support surface 24.

Fluid lines 16 are connected in parallel via line connector 34. Fluid lines 16 may be made of, for example, rubber, plastic, polyvinyl chloride (PVC), or metal.

- 10 One of fluid lines 16 is connected to single valve 18. Single valve 18 is preferably mounted at a perimeter location 36 of support 12 to make it readily accessible and locatable for a person sitting in article of furniture 10. Single valve 18 is configured to be selectively closed to prevent air from flowing into air bladders 14 and thereby prevent further biasing of expandable foam 26 toward expanded state 28 thereof. Conversely, single valve 18 can be opened to permit airflow therinto and thus allow expandable foam 26 to return to expanded state 28. Single valve  
15 18 may be, for example, a spring-loaded pull valve or a turn valve.

- Air bladder system 38, which includes air bladders 14, fluid lines 16, single valve 18 and flexible support member 30, of a support 12 can be adjusted. Single valve 18 is opened to permit travel of air therethrough. Depending on how a person chooses to sit in article of furniture 10, at least one air bladder 14 and expandable foam 26 associated therewith is compressed, thereby  
20 forcing at least a portion of the air from expandable foam 26. That portion of the air escapes into at least one fluid line 16 and out through open single valve 18. Single valve 18 is closed to prevent ingress of air into expandable foam 26 of at least one compressed air bladder 14, thereby retaining at least one compressed air bladder 14 in an at least partially compressed state. The

adjustment may include a further step of opening single valve 18 to allow the ingress of air into expandable foam 26, thereby permitting expandable foam 26 to fill with air and expand.

Various alternate embodiments are considered to fall within the scope of the present invention. For example, article of furniture 10 may also have arm rests (not shown) and need not necessarily have legs and may or may not be cushioned, depending on its intended use. Further, instead of being a chair as set forth in the illustrated embodiment, the article of furniture may be, for example (not shown), a recliner, rocker, couch, sofa, ottoman, stool, desk, keyboard support or wrist pad for use with a keyboard support. In certain instances, seat 20 and/or the arm rests could, alternatively or additionally to seat back 22, also act as supports in the manner defined in the present embodiment. Further, the support may be designed to support any of various body parts including, for example, arms, legs, back, head or parts thereof such as wrists or feet. In a further alternative, air bladders 14 could be connected in series (not shown) using a single fluid line 16 therebetween, with one of air bladders 14 connected via another fluid line 16 to single valve 18. Additionally, flexible support member 30 may be mounted temporarily (i.e., mechanically; not shown) to support surface 24.

While this invention has been described as having a preferred design, the present invention can be further modified within the spirit and scope of this disclosure. This application is therefore intended to cover any variations, uses, or adaptations of the invention using its general principles. Further, this application is intended to cover such departures from the present disclosure as come within known or customary practice in the art to which this invention pertains and which fall within the limits of the appended claims.